

REMARKS

During the discussion it was noted that the rejections of Claims 2 and 4-14 as being indefinite may be addressed by deleting "sheet-like" and inserting "in the form of a sheet" where appropriate.

Further, the present invention as set forth in **amended Claim 2** relates to a prepreg, comprising:

reinforcing fiber,

a reinforcing fiber substrate in the form of a sheet and containing reinforcing fiber,

and

a matrix resin,

wherein said matrix resin exists on both surfaces of said reinforcing fiber substrate,

wherein a portion inside said reinforcing fiber substrate into which said matrix resin has not been impregnated is continuous, and

wherein said matrix resin comprises a microcapsule based latent curing agent.

Xu et al, Hattori et al and Kishi et al fail to disclose or suggest a prepreg as claimed in which the matrix comprises a microcapsule based latent curing agent as claimed.

A microcapsule based latent curing agent has a structure, in which a membrane covers the curing agent component, and a resin composition including the microcapsule based latent curing agent cures by heating the resin composition to destroy or melt the membrane, so that the curing agent component contacts with the epoxy resin. Namely, curing reaction and increase of the viscosity of the resin composition do not occur until the membrane is destroyed or melted.

Meanwhile, in the partial impregnation prepreg of the present invention and Xu et al, it is necessary for the resin to move to the non-impregnated portion during the curing. In this case, the heavier the weight (g/m^2) of reinforcing fiber substrate used, the larger the non-

impregnated portion becomes and the more the movement distance of the resin becomes during the curing. In fact, a molded product without voids can not be produced without keeping the viscosity of the resin low during the curing, because the resin can not reach the non-impregnated portion.

Fig. 1 below shows the changes of the viscosity of the resin composition relative to an increase of temperature during the curing. As shown in Fig. 1, using a microcapsule in the curing agent can delay the time in which the viscosity of the resin composition begins to increase and can lower the minimum viscosity required for the resin to reach the non-impregnated portion. Assuming that a viscosity of less than η is appropriate for the impregnation of the resin, the time to keep the viscosity less than η is longer when using the microcapsule based latent curing agent. As a result, the matrix resin of the present invention can keep a lower viscosity for a long time until the resin is cured, and a molded product without voids can be obtained even if the fiber substrate has a heavy weight (g/m^2).

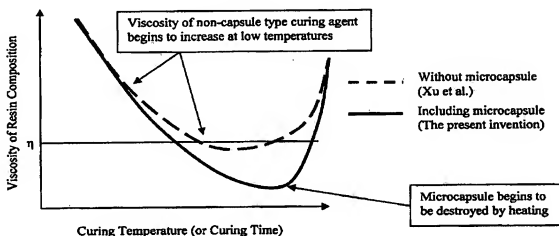


Fig.1

For further understanding of the invention see for example Figure 3 which illustrates an embodiment of the present invention and compare to Figure 5. In Figure 3, the matrix resin non-impregnated layer 32 is formed as a continuous layer, while in Figure 5 there is a non-continuous non-impregnated layer. See also the discussion of these figures at page 16, starting at line 4 of the specification.

Further, the specification states at page 15, lines 11-18 as follows:

In a prepreg according to the second embodiment, the portion inside the sheet-like reinforcing fiber substrate into which the matrix resin has not been impregnated must be a continuous portion. In the second embodiment, this non-impregnated portion functions as the deaerating circuit, and the existence of this deaerating circuit means that the molded FRP can be formed without internal voids and surface pinholes.

However, if this deaerating circuit is segmented by the matrix resin, then the air that is enclosed by the matrix resin becomes extremely difficult to remove, and can give rise to internal voids and surface pinholes.

Hattori et al and Kishi et al do not cure the defects of Xu et al.

Therefore, the rejection of the claims over Xu et al, Hattori et al and Kishi et al is believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of this rejection is respectfully requested.

Finally, Applicants note that MPEP §821.04 states, "if applicant elects claims directed to the product, and a product claim is subsequently found allowable, withdrawn process claims which depend from or otherwise include all the limitations of the allowable product claim will be rejoined." Applicants respectfully submit that should the elected group be found allowable, the non-elected claims should be rejoined.

In addition, should the elected species be allowable, the Examiner should expand his search to the non-elected species.

This application presents allowable subject matter, and the Examiner is kindly requested to pass it to issue. Should the Examiner have any questions regarding the claims or otherwise wish to discuss this case, he is kindly invited to contact Applicants' below-signed

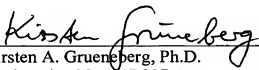
Application No. 10/521,433
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representative, who would be happy to provide any assistance deemed necessary in speeding
this application to allowance.

Respectfully submitted,

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